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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,572	10/23/2001	Carl D. Burch	10019928-1	1171

7590 09/13/2004
HEWLETT-PACKARD COMPANY
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EXAMINER

RUTTEN, JAMES D

ART UNIT PAPER NUMBER

2122

DATE MAILED: 09/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/017,572

Applicant(s)

BURCH, CARL D.

Examiner

J. Derek Rutten

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/22/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-20 have been examined.

Claim Objections

2. Claim 16 is objected to because of the following informalities: A typo in line 2 results in the phrase "the least one block". It is assumed to mean --~~the~~ at least one block--. Appropriate correction is required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1, 6, 11, and 16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11, 2, 20, and 2, respectively, of U.S. Patent No. 6,308,320 (hereinafter "the '320 patent") in view of U.S. Patent 5,805,899 to Evans et al. (hereinafter "Evans").

As per claim 1, claim 11 (dependent upon claim 10) of the '320 patent discloses:

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A method for optimizing compilation time of a program (column 17 line 39: “A method for incremental selective compiling”),

generating a current hash value for a block of code in the program (column 17 lines 46-48: “**hashing** a first hash value from said first instruction and associating said first hash value with said intermediate code file”);

skipping optimization of the block of code if the current hash value equals a prior hash value (column 17 lines 54-56: “**reusing** said **object code** file when said first hash value **matches** said second hash value”);

Claim 11 of the ‘320 patent further discloses associating a hash value with a block of code (column 17 lines 52-53: “**associating** said second **hash value** with said **object code** file”). Claim 11 further discloses generating a new block of code *if the hash value is not equal to the prior hash value for the block of code* (column 17 lines 58-60).

Claim 11 of the ‘320 patent does not expressly disclose: *storing the current hash value in the block of code.*

However, in an analogous environment, U.S. Patent 5,805,899 to Evans et al. (hereinafter “Evans”) teaches storing version information of an object file through a hash value stored in a block of code (column 9 lines 35-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Evan’s hash value storage with the ‘320 patent’s object code.

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One of ordinary skill would have been motivated to identify object files corresponding to a given intermediate file which would signify varying levels of optimization.

As per claim 6, claim 2 (dependent upon claim 1) of the '320 patent discloses:

A system for optimizing compilation time of a program (column 16 lines 1-2), the program including at least one block of code, comprising:

means for generating a hash value for a block of code in the program (column 16 lines 53-54);

means for skipping optimization of the block of code if the hash value equals the prior hash value (column 16 lines 61-62).

Claim 2 of the '320 patent further discloses associating a hash value with a block of code (column 16 lines 58-59). Claim 2 also discloses generating a new block of code *if the hash value is not equal to the prior hash value for the block of code (column 16 lines 65-67).*

All further limitations have been addressed in the above rejection of claim 1.

As per claim 11, claim 20 (dependent upon claim 19) of the '320 patent discloses:

A computer readable medium for optimizing compilation time of a program (column 18 lines 28-30), the program including at least one block of code, comprising:

logic for generating a hash value for a block of code in the program (column 18 lines 38-40);

logic for skipping optimization of the block of code if the hash value equals the prior hash value (column 18 lines 48-49).

Claim 20 of the '320 patent further discloses associating a hash value with a block of code (column 18 lines 45-46). Claim 20 of the '320 patent also discloses generating a new block of code if the hash value is not equal to the prior hash value for the block of code (column 18 lines 53-55).

All further limitations have been addressed in the above rejection of claim 1.

As per claim 16, the '320 patent discloses:

a compiler that generates at least one block of code from the program (column 16 line 45-46); and

a compilation optimizer (the system of claim 1 of the '320 patent inherently supplies an optimizer since the system improves upon, or optimizes, the system upon which it is based.).

All further limitations have been addressed in the above rejection of claim 6.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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6. Claims 1-10, and 16-20 are rejected under 35 U.S.C. 102(a) as being anticipated by prior art of record "SmartBuild High-Level Design Version 1.0" by Burch and Nystrom (hereinafter "Burch").

As per claim 1, Burch discloses:

A method for optimizing compilation time of a program (page 1 Section 1 paragraph 1), the program including at least one block of code, said method comprising steps of:

generating a current hash value for a block of code in the program (page 1 Section 3 paragraph 1: "When building a SOM, the Ucode subspace (section in ELF) is input to a secure hash algorithm.");

skipping optimization of the block of code if the current hash value equals a prior hash value (page 2 Section 4 paragraph 1: "If the <sic> is a match, the SOM is reused"); and

*storing the current hash value in the block of code if the hash value is not equal to the prior hash value for the block of code (page 1 section 3 paragraph 1: "The resulting hash value is output into an aux header in the SOM..."; also page 2 section 4 paragraph 1: "otherwise, the ISOM is recompiled and the **resulting SOM is saved** in a new directory corresponding to its hash value.").*

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As per claim 2, the above rejection of claim 1 is incorporated. Burch further discloses: *allocating area for the generated hash value* (page 1 section 3 paragraph 1).

As per claim 3, the above rejection of claim 1 is incorporated. Burch further discloses: *setting a scope of the least one block of code* (page 1 Section 1 paragraph 2).

As per claim 4, the above rejection of claim 1 is incorporated. Burch further discloses: *using a parameter in hashing function to generate the hash value, wherein the parameter is selected from at least one of the group of a code stream, and a data stream* (page 1 Section 3 paragraph 1).

As per claim 5, the above rejection of claim 1 is incorporated. Burch further discloses: *generating a notice when the hash value is not equal to a prior hash value for the block of code* (page 2 section 4 paragraph 1; a notice is inherent in the conditional recompilation as described, otherwise there would be no way to trigger the recompilation.).

As per claim 6, Burch discloses: *A system for optimizing compilation time of a program* (page 1 Section 1 paragraph 2: “we must have a means of identifying the set of reusable object files”). All further limitations have been addressed in the above rejection of claim 1.

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As per claims 7-10, the above rejection of claim 6 is incorporated. All further limitations have been addressed in the above rejection of claims 2-5, respectively.

As per claim 16, Burch discloses:

A system for optimizing compilation time of a program (page 1 Section 1 paragraph 2: “we must have a means of identifying the set of reusable object files”), *comprising:*

a compiler that generates at least one block of code from the program (page 1 Section 1 paragraph 1: “incrementally **recompiling** only those **ISOMs** changed...”); *and*

a compilation optimizer (page 1 Section 1 paragraph 1: “SmartBuild provides a facility for reusing SOMs resulting from ISOM builds, incrementally recompiling only those ISOMs changed since the prior build”; This passage describes an optimizer, since the overall compilation time will likely decrease due to the presence of the SmartBuild tool.).

All further limitations have been addressed in the above rejection of claim 1.

As per claims 17-20, the above rejection of claim 16 is incorporated. All further limitations have been addressed in the above rejection of claims 2-5, respectively.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burch in view of Evans.

As per claim 11, Burch does not expressly disclose: *A computer readable medium*. All further limitations have been addressed in the above rejection of claim 1. However, in an analogous environment, Evans teaches using a computer readable medium (column 16 line 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Evan's teaching of a computer readable medium with Burch's optimizing compiler. One of ordinary skill would have been motivated to store the compilation system for future use and distribution.

As per claims 12-15, the above rejection of claim 11 is incorporated. All further limitations have been addressed in the above rejection of claims 2-5, respectively.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Evans discloses a linker that stores version information in an object file in the form of

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a hash value (Fig. 6). U.S. Patent 5,204,960 to Smith et al. discloses incremental compilation based on version information stored in an external file.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Derek Rutten whose telephone number is (703) 605-5233. The examiner can normally be reached on M-F 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (703) 305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jdr

A handwritten signature in cursive script, reading "Anthony Nguyen-Ba".

ANTONY NGUYEN-BA
PRIMARY EXAMINER